

# Installation Instructions for the DX2010 Input Expander

## 1.0 General Information

The DX2010 is an input expander that connects directly to the data bus of compatible control/communicators. Each expander allows an additional eight input loops to be connected to the control/communicator. See the control panel's literature for programming instructions.

## 2.0 Specifications

- **Operating Voltage:** 8 VDC to 14 VDC
- **Current Draw:** 35 mA standby; 135 mA max with connected accessories
- **Outputs:** 100 mA, 12 VDC supervised output for accessories
- **Sensor Loop Terminal Wire Size:** #14 AWG (1.8 mm) to #22 AWG (0.8 mm)
- **Operating Temperature:** +32°F to +122°F (+0°C to +50°C)
- **Relative Humidity:** 5% to 85% @ +86°F (30°C) non-condensing
- **Max. Sensor Loop Resistance:** 60 W
- **Sensor Loop:** Up to eight inputs; input contacts can be Normally Open (NO) or Normally Closed (NC) with appropriate EOL resistor(s) for supervision.
- **Control Panel Compatibility:** DS7240, DS7220, D6412, D4412

## 3.0 Mounting



Failure to follow the instructions in this manual may result in personal injury and/or damage to the equipment.



The DX2010 contains static-sensitive components and must be handled with care. Follow anti-static procedures when handling the modules.



Test according to NFPA 72 if used in fire applications.

Up to five DX2010 Modules can be installed in the control/communicator's enclosure, three on the interior walls and two on the back wall of the enclosure (see Figures 1 and 2).

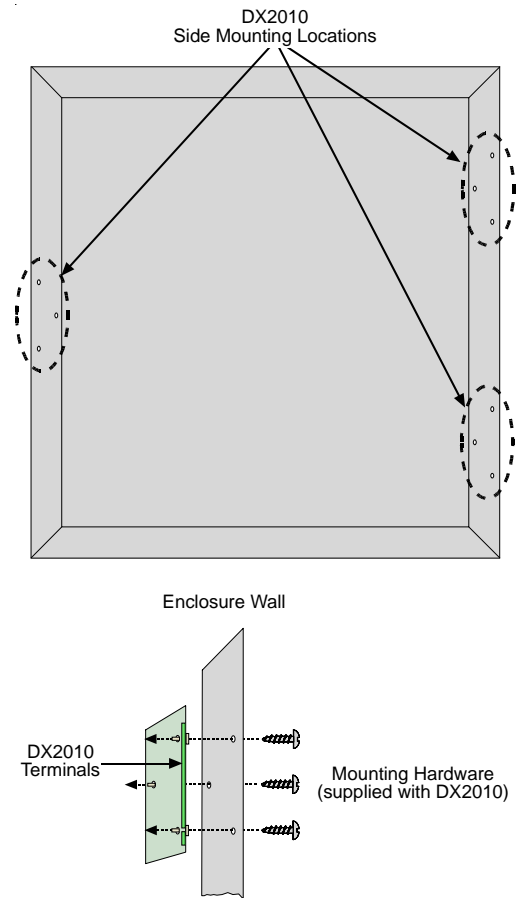


Figure 1: Control Panel Enclosure Side Wall Mounting

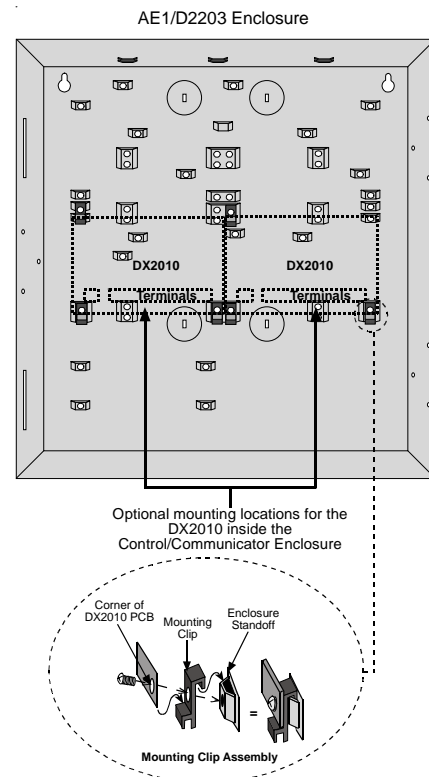


Figure 2: Control Panel Enclosure Back Wall Mounting

Another mounting option for the DX2010 is a D203 Enclosure. See Figure 3.

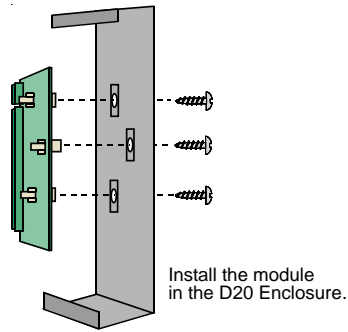


Figure 3: Mounting the DX2010 in a D203 Enclosure

#### 4.0 Wiring



Remove all power to the system (AC and standby battery) before making or breaking any connections. Failure to do so might result in personal injury and/or damage to the equipment.

#### 4.1 Data Bus Connections

Connect the DX2010 to the control/communicator data and auxiliary power sources. The DX2010 can be powered directly from the data bus (see Figure 4).

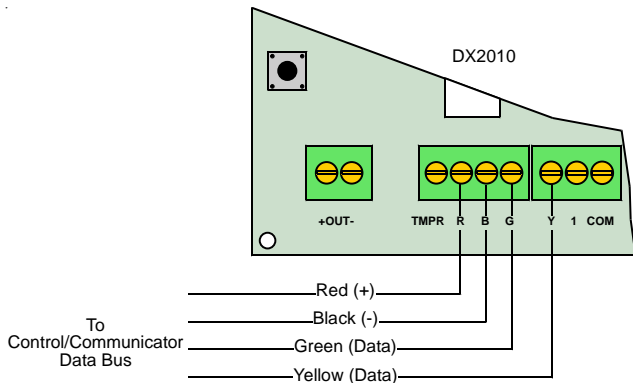


Figure 4: Control/Communicator Connections

If using an external 12 VDC power supply, wire as shown in Figure 5.



When using any external power supply, the negative (-) output must not be tied to earth ground. A ground fault condition will be reported if negative (-) is grounded.

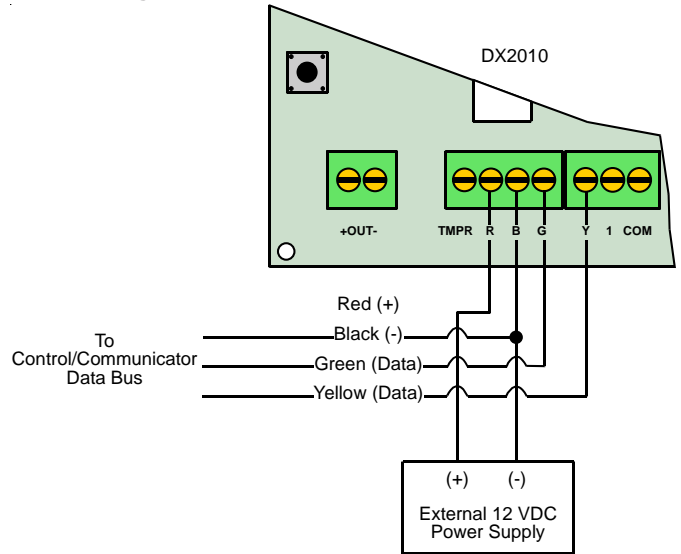


Figure 5: External Power Supply Connections

See Table 1 for the data bus wiring length requirements.

	#22 AWG (0.8 mm)	#18 AWG (1.2 mm)
Panel to DX2010 DX2010 AUX Output <b>not</b> used	1000 ft. (305 m)*	2000 ft. (610 m)*
Panel to DX2010 DS2010 AUX Output supplying 100 mA	100 ft. (30 m)**	250 ft. (76 m)**

Table 1: Wire Lengths

\* Wire length may be restricted by panel limitations. See the panel's *Installation Guide* for more information.

\*\* If the DX2010 is powered directly by an external auxiliary power supply (Figure 5), use the wire lengths specified in the first row of Table 1.

#### 4.2 Auxiliary Output Connections

The DX2010 has the capacity to provide 12 VDC at up to 100 mA from the Auxiliary Output (+) OUT (-) terminals to power external devices such as motion detectors (see Figure 6).

If a trouble condition occurs on the DX2010 (such as an overcurrent condition), it sends a data bus trouble message to the panel.



When using the auxiliary output on the DX2010, the maximum distance between the control/communicator and the module must be limited to 250 ft. (76 m) using #18 AWG (1.2 mm) wire or 100 ft. (30 m) using #22 AWG (0.8 mm) wire. The maximum distance from the DX2010 output terminals and the external devices (PIRs, smoke detectors, etc.) must be limited to 50 ft. (15 m) for #22 AWG (0.8 mm) or 100 ft. (30 m) for #18 AWG (1.2 mm) wire.



If the DX2010 Module is powered by an external 12 VDC power supply, the output terminals can supply power for up to 450 ft. (138 m) from the DX2010 to the remotely powered devices.



If the DX2010's Aux Output ("+Out-" terminals) is used as an auxiliary power source, the DX2010's R and B wires must be home-run to either the panel or to an auxiliary power supply. Do not use a daisy-chain wire configuration (see Figure 6).

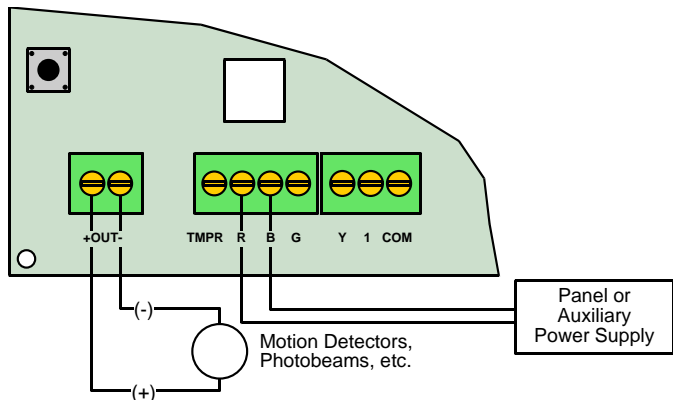


Figure 6: Auxiliary Output Connections

#### 4.3 Tamper Input Connections

Each DX2010 provides an input for tamper devices. The tamper input monitors external Normally Closed (NC) tamper switches when wired as shown in Figure 7. The tamper circuit must be closed to provide proper DX2010 tamper supervision to the control panel. **Do not use an EOL resistor.**

The DX2010 also provides an on-board tamper switch for use if the DX2010 is installed inside the AE20 plastic enclosure. The cover tamper spring is supplied with the DX2010. The on-board tamper switch cannot be used if the DX2010 is mounted inside the control panel's enclosure (wire the tamper input as shown in Figure 7 if installed in the control panel's enclosure).

Use either the tamper input or the on-board tamper switch. Both cannot be used simultaneously.

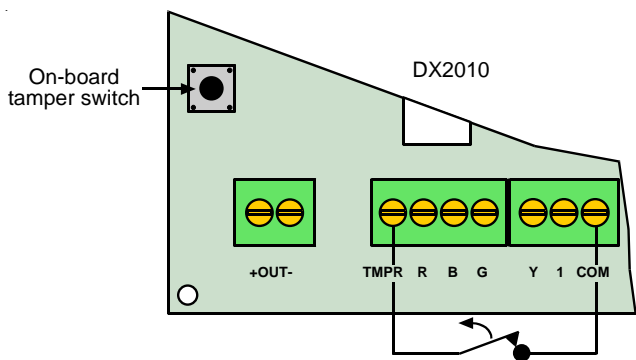


Figure 7: Tamper Wiring

If neither the tamper input nor the on-board tamper switch are used, a wire jumper must be placed as shown in Figure 8.

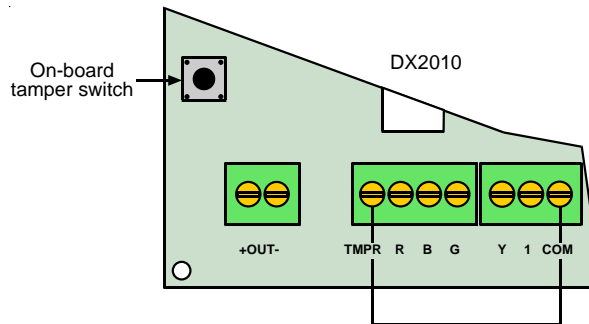


Figure 8: Wire Jumper Location

#### 4.4 Sensor Loop Connections

The DX2010 has the capacity for both Normally Open (N/O) and Normally Closed (N/C) contacts. Wire the inputs as shown in Figure 9.



The DX2010 is not designed for use with two-wire smoke detectors.



Only use Normally Open (N/O) contacts for fire applications.

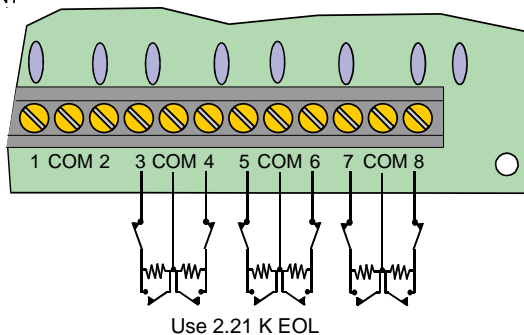


Figure 9: Single Point/Zone Sensor Loop Wiring

For Point/Zone Doubling, wire the inputs as shown in Figure 10.

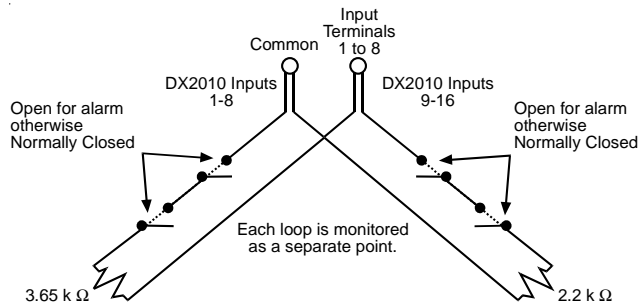


Figure 10: Doubled Point/Zone Wiring



Zone doubling is not permitted for fire applications.

#### 4.5 Tamper Point/Zone Inputs

This feature is not available for some control/communicators. Consult your control/communicator's *Installation Instructions*.

The DX2010 has the capacity for dual tamper point/zone inputs utilizing two EOL resistors (using 1.5k or 2.2k Alarm Resistor). See *Figure 11*.

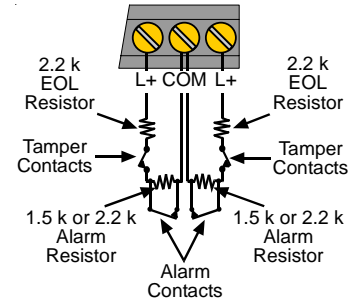


Figure 11: Dual Point/Zone Input Wiring

#### 5.0 DX2010 LED Operation

The DX2010 LED (*Figure 12*) flashes to indicate the status of the device. The LED indications are:

- One flash per second indicates normal operation.
- LED steady ON can indicate any of the following:
  - G wire is not connected or there is a communications problem between the control panel and the DX2010.
  - No locations/points are assigned to the DX2010 with this address. See your control/communicator's programming guide for location/point assignment instructions.
  - Address on the DX2010 is not set correctly.
- LED OFF indicates that there is no power to the module.

Status LED

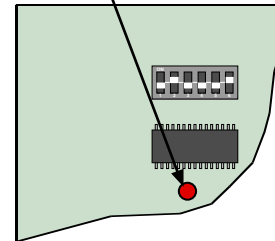


Figure 12: DX2010 Status LED

#### 6.0 Setting the DX2010's Address

Use *Table 2* to configure the DX2010's address. Refer to the control/communicator's installation manual to determine the appropriate address for each DX2010 you connect. *Figure 13* shows the DIP switch configuration.



**Each time you change the address DIP switches, cycle the power to the DX2010 (turn the power off and then on) for the address change to take effect.**

Example:  
Module Address 102

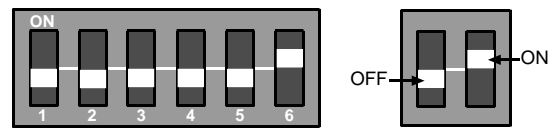


Figure 13: DIP Switch Configuration

DIP Switches	DIP Switch Settings						DIP Switches	DIP Switch Settings					
	S1	S2	S3	S4	S5	S6		S1	S2	S3	S4	S5	S6
Module Address	32	16	8	4	2	1	Module Address	32	16	8	4	2	1
101	OFF	OFF	OFF	OFF	OFF	OFF	117	OFF	ON	OFF	OFF	OFF	OFF
102	OFF	OFF	OFF	OFF	OFF	ON	118	OFF	ON	OFF	OFF	OFF	ON
103	OFF	OFF	OFF	OFF	ON	OFF	119	OFF	ON	OFF	OFF	ON	OFF
104	OFF	OFF	OFF	OFF	ON	ON	120	OFF	ON	OFF	OFF	ON	ON
105	OFF	OFF	OFF	ON	OFF	OFF	121	OFF	ON	OFF	ON	OFF	OFF
106	OFF	OFF	OFF	ON	OFF	ON	122	OFF	ON	OFF	ON	OFF	ON
107	OFF	OFF	OFF	ON	ON	OFF	123	OFF	ON	OFF	ON	ON	OFF
108	OFF	OFF	OFF	ON	ON	ON	124	OFF	ON	OFF	ON	ON	ON
109	OFF	OFF	ON	OFF	OFF	OFF	125	OFF	ON	ON	OFF	OFF	OFF
110	OFF	OFF	ON	OFF	OFF	ON	126	OFF	ON	ON	OFF	OFF	ON
111	OFF	OFF	ON	OFF	ON	OFF	127	OFF	ON	ON	OFF	ON	OFF
112	OFF	OFF	ON	OFF	ON	ON	128	OFF	ON	ON	OFF	ON	ON
113	OFF	OFF	ON	ON	OFF	OFF	129	OFF	ON	ON	ON	OFF	OFF
114	OFF	OFF	ON	ON	OFF	ON	130	OFF	ON	ON	ON	OFF	ON
115	OFF	OFF	ON	ON	ON	OFF	131	OFF	ON	ON	ON	ON	OFF
116	OFF	OFF	ON	ON	ON	ON	132	OFF	ON	ON	ON	ON	ON

ON indicates the DIP switch is in the ON position; OFF indicates the DIP switch is in the OFF position.

Table 2: Address Jumper Settings